SYSTEM TEST REPORT

For the

Console Replacement System (CRS) Build 10.0 and Voice Improvement Processor (VIP) Build 3.1

October 2004

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service/Office of Operational Systems
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Attachments

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Acronyms

ACP	Audio Control Panel
ASCII	American Standard Code for Information Interchange
AWIPS	Advanced Weather Interactive Processing System
CCB	Configuration Control Board
CD	Compact Disc
CRS	Console Replacement System
DMO	Demonstration
EAS	Emergency Alert System
EO	Emergency Override
FEP	Front End Processor
FTP	File Transfer Protocol
IP	Internet Protocol
MP	Main Processor
NOAA	National Oceanic and Atmospheric Administration
NWR	NOAA Weather Radio
NWRSAME	NOAA Weather Radio Specific Area Message Encoder
NWS	National Weather Service
OAT	Operational Acceptance Test
OPS	Office of Operational Systems
OPS23	Office of Operational Systems, Software Branch
OPS24	Office of Operational Systems, Test and Evaluation Branch
ROAMS	Remote Off-Air Monitoring System
SOM	System Operator Manual
SFTP	Secure File Transfer Protocol
SRS	System Requirement Specification
SSH	Secure Shell
SSO	Synthetic Speech Override
ST	System Test
TRG	Test Review Group
TTR	Test Trouble Report
TTS	Text-To-Speech
VIP	Voice Improvement Processor
WAV	Waveform Audio
WSH	Weather Service Headquarters
UGC	Universal Generic Code

1.0 Purpose

This report documents the tests performed during a System Test (ST) to verify the National Oceanic and Atmospheric Administration (NOAA) Weather Radio (NWR), Console Replacement System (CRS) Build 10.0, Voice Improvement Processor (VIP) Build 3.1, conforms to a set of functional requirements prior to commencing Operational Acceptance Test (OAT).

Detailed background information for the ST may be found in the *SYSTEM TEST PLAN, for Console Replacement System (CRS) Build 10.0/Voice Improvement Processor (VIP) Build 3.1*, dated June 2004. The ST was conducted in accordance with this ST Plan.

2.0 Introduction

The ST was performed at the National Weather Service (NWS) Headquarters (WSH) located in Silver Spring, Maryland, between June 15 and August 5, 2004, by personnel from Office of Operational Systems, Test and Evaluation Branch (OPS24). An ST Test Review Group (TRG) composed of WSH and NWS Regional personnel adjudicated and prioritized problems documented during the ST.

The CRS software tested for the CRS Build 10.0 ST were Builds 9.90; 9.91; 9.92; and 9.93. The VIP software tested were Builds 3.0.5, and 3.0.6. The fielded version of the software was designated as CRS Build 10.0 and VIP Build 3.1.

The CRS Build 10.0/VIP Build 3.1 software contains 10 software enhancements and 16 software fixes, including automatic CRS and VIP user's password checking, secure file transfers using the Secure File Transfer Protocol "sftp", and authenticated secure shell "ssh" key installations.

The CRS Build 10.0/VIP Build 3.1 was originally designed to expect Advanced Weather Interactive Processing System (AWIPS) to have a concurrent "sftp" implementation of their message file transfers to CRS. However, according to the latest CRS Build 10.0/VIP Build 3.1 Release Notes (see Attachment F), the CRS will process the normal VIP conversion file transfers using "sftp", between CRS and VIP only; CRS will continue to properly handle incoming AWIPS messages transferred via the current "ftp" protocol. The use of "sftp" between CRS and VIP will be transparent and will not incur any limitations, including any communication issues with the current AWIPS "ftp" handling.

3.0 Objectives

The overall objective of this ST was to validate the enhancements, and scheduled software fixes in CRS Build 10.0/VIP Build 3.1 performed as specified in the CRS and VIP Release Notes (See Attachment F) referenced in the ST Plan. The specific objectives of this ST were:

a. Verify the Engineering Handbook 7 (EHB-7) Software Note 6 document instructions for the installation of CRS Build 10.0 and the VIP Build 3.1 software are complete and accurate.

b. Verify, in a simulated environment, scheduled software fixes and enhancements were properly incorporated into the CRS and VIP, and perform as specified in the CRS Build 10.0/VIP Build 3.1 Release Notes.

c. Ensure there was no system degradation by performing regression testing; and identify any problems preventing start of the CRS Build 9.0/VIP Build 3.0 OAT.

4.0 CRS Build 10.0/VIP Build 3.1 Contents

The CRS Build 10.0/VIP Build 3.1 software contains 10 software enhancements and 16 software fixes, including automatic user's password checking, CRS and VIP secure file transfers using "sftp**"**, authenticated "ssh**"** key installations, VIP remote file transfers using "sftp**"**, and the NWRSAME DMO test tone capability.

A feature included (but not activated) in the new build is the capability for externally generated voice files. This capability allows the input of waveform audio (WAV) files with appended CRS header data. This function would have allowed WAV files, generated outside of CRS with correct header data, to be checked on input, saved in the CRS database, and broadcasted normally.

However, during the ST, there were some problems found with the externally generated voice processing. These problems were attributed to:

a. Design. The main parsing, input queue, and other related critical code routines were shared with the non-related VIP Communications Processing Voice Conversion (CP_VC) process. The ST TRG agreed that a stand-alone process dedicated to this function might serve as a better solution. OPS23 agreed to revisit the design for a future build.

b. Performance. During the ST, several externally generated voice messages were tested (including some watches and warnings) which resulted to slower than usual playback, as verified by the Broadcast Cycle window scheduling. Some externally-generated message name anomalies and message interruption inconsistencies during normal and override conditions were also observed.

The ST TRG subsequently decided that the externally generated voice processing feature be deactivated for the OAT and for the nationally deployed CRS Build 10.0/VIP Build 3.1. OPS23 added that this functionality could be available, in a future build, in support of the all-hazards collection system.

<u>The following Test Trouble Report (TTR) numbers were incorporated into the CRS B10.0 and VIP B3.1 software releases. Refer to the CRS B10.0/VIP B3.1 Release Notes (see Attachment F) for details:</u>

Software Enhancements

TTR 832 - **Support For Externally Generated Voice Products**
(This function will not be activated in Build 10.0)

TTR 831 - **Add Special DMO Test NWRSAME Capability**

TTR 804 - **Replacement of FTP Transactions With SFTP**
(AWIPS is not implementing this feature in Build 10.0)

TTR 805 - **CRS and VIP Automatic Password Checking**

TTR 807 - **VIP Disk Imaging System Changed To Mondo System**

TTR 808 - **CRS Application Changes In MPs To Accommodate SFTP Transactions With VIP**

TTR 809 - **SFTP Flag Installation On AWIPS**

TTR 811 - **VIP SFTP Changes**

TTR 813 - **CRS SFTP Wrapper**

TTR 815 - **Expansion Of Civilian Generated Event Codes Table**

Bug fixes

TTR 833 - **Date Time/AWIPS Time Updates Stop/Start Message Processing Software**

TTR 834 - **Multiple Future Effective Time Watch/Warning Interrupts Not Scheduled**

TTR 835 - **MMI Display's Font Is Too Small**

TTR 836 - **CRS/ROAMS Interface Software Does Not Recognize Local 10-Digit Dialing Bit**

TTR 786 - **VIP Processing/Manual Recording Collision**

TTR 806 - **VIP OS Security Patches**

TTR 810 - **Messages With Duplicate LACs Are Not Scheduled**

TTR 812 - **Remote FTP Script Changes**

TTR 816 - **Remove Spurious Messages From The MMI**

TTR 819 - **Multiple Sets Of VIPserver Process May Run**

TTR 821 - **SOM Changes**

TTR 823 - **Some Site Identifiers Are Incorrect In The VIP**

TTR 803 - **Off-Line Tone Generator Failure To Write Configuration To Disk**

TTR 852 - **The Save As Function Does Not Work For Listening Areas and Listening Areas**

TTR 856 - **Message Record/Playback Dialog Help Problems**

TTR 854 - **Print Jobs Cannot Be Removed From Print Queue**

5.0 Test Conduct

The CRS Build 10.0/VIP Build 3.1 ST began on June 14, 2004 with a Test Readiness Review which the CRS/VIP software manager certified the test system and its components. The CRS/VIP software manager also declared the following statements:

a. The CRS Build 10.0/VIP Build 3.1 software had undergone a successful system integration test and the system was ready to begin formal system testing.

b. Test Track database will be used to document problems found during the CRS Build 10.0/VIP Build 3.1; this is a New CRS database which has been created from the Old CRS database.

During the review, it was decided to conduct all weekly TRG meeting with WSH personnel only. OPS24 will inform regions by the meeting minutes. Regions will be invited to the last TRG meeting which will also serve as an OAT Readiness Review.

The CRS installation Compact Disc (CD) (Build 9.90), 6 VIP installation CDs (Build 3.0.5), and technical documentation (i.e. Engineering Handbook-7 (EHB-7) Software Note 6, Release Notes, CRS System Administration Manuals, Appendixes, etc.) were delivered to OPS24 at the end of the review.

The ST was successfully conducted utilizing three CRS configurations: Maximum (13 transmitters); Large (7 transmitters); and Typical (1 transmitter). A master suite of 32 test procedures were completed for the Maximum configuration. A subset of the test procedure suite was used for the Large (17 test procedures), Typical (11 test procedures) configuration, and 25

test procedures for retesting the Maximum configuration. The subsets omitted redundant procedures dealing with such items as software installation or dictionary backup, etc. (See Attachments A, B, C, and D for details).

The ST was conducted in the WSH CRS Integrated Test Bed (ITB) using a single test CRS with a VIP workstation. The ST used:

a. English and Spanish text Weather Messages with CRS headers created manually. Both English and Spanish test messages were sent to CRS either manually or new script files from AWIPS simulator via "ftp". The CRS forwards text messages to VIP for conversion to audio messages.

` b. Externally Generated Voice Messages sent by Linux script files running on AWIPS simulator to CRS. The externally generated voice messages were created by appending a recorded 16 bit sample wave file to a proper CRS header; the CRS weather message header contained "V_ENG" and "V_SPA" for English and Spanish voice.

c. CRS test messages created by AWIPS message formatters [Interactive Computer Worded Forecasts (ICWF) and the CRS AWIPS Formatter Extended (CAFE)] using the WSH test AWIPS [the NWS Modernization Test and Integration AWIPS, Weather Forecast Office (WFO) System (NMTW)].

d. NWR Specific Area Message Encoder (NWRSAME), 4407 and DCR-450 decoders.

e. A Remote Off-Air Monitoring System (ROAMS) Monitor Unit (MU) simulator.

6.0 Test Problem Adjudication

As specified in the ST Plan, all problems observed were documented in TTRs. During the TRG weekly meetings, action items were assigned to individuals or NWS Branches to resolve issues raised as a result of TTRs.

The **TestTrack Pro** database was used to document TTRs, which includes, among other relevant problem information, the **Impact** (I) and the **Priority** (P) of each TTR. The ST cannot proceed to OAT with any outstanding TTRs designated with either Impact 1 or 2.

The **Impact** field deals with how each problem affects the overall broadcast mission. The problem can be assigned (sorted in ascending severity):

Impact 1 – prevent message broadcast, no workaround
Impact 2 – prevent broadcast with reasonable workaround
Impact 3 – degradation of broadcast
Impact 4 – less critical – loss of minimum capability
Impact 5 – minimum to no impact, nice to have.

The **Priority** field deals with how the problem is planned to be resolved. The problem can be assigned (sorted in ascending severity):

Priority 1 – need immediate emergency fix
Priority 2 – include in the next build
Priority 3 – include in future build
Priority 4 – requires replacement system
Priority 5 – undetermined

If a problem is assigned a **Priority** of **1**, an immediate suspension of the ST will result and the TRG will assign the problem resolution to the responsible personnel. If the problem in question has been deemed resolved by the TRG, the ST will resume and any further regression testing will be performed.

A total of fifty-five TTRs were generated to document problems found during the CRS Build 10.0/VIP Build 3.1 ST. The TTRs written during the ST are summarized in Attachment E. All TTRs were reviewed and categorized by the TRG as follow:

Operational Impact 1	**Operational Impact 2**	**Operational Impact 3**	**Operational Impact 4**	**Operational Impact 5**
5	5	10	22	13

At the end of the ST, all the TTRs designated with Impact 1 and 2 were fixed. The results of TTRs are listed as follow:

a. Sixteen TTRs were closed
b. Fifteen TTRs were assigned to OAT for verifying and they will be closed at the OAT completion.
c. Twelve TTRs are pending on the CCB review.
d. Four TTRs were assigned to OPS23 for analysis.

7.0 Test Summary

Multiple CRS and VIP builds were tested during the CRS Build 10.0/VIP Build 3.1 ST to validate all the fixes for the CRS and VIP TTRs.

7.1 CRS Build 9.90 and VIP Build 3.0.5

On June 15, 2004, OPS24 commenced the ST with CRS Build 9.90/VIP Build 3.0.5 ST using the Maximum (13 transmitters) configuration ST checklist. The EHB-7 Software Note 6 document was used for this installation.

There was a total of ten installation parts with the EHB-7 Software Note 6. The estimated total time required to complete with all installations is three hours but the actual time was much longer than anticipated due to the confusing instructions of Part 9, Installation of SSH key. This section should have been divided into two separate sections: **Part 9.1 Installation of SSH keys without AWIPS keyfile** and **Part 9.2 Installation of SSH keys with AWIPS keyfile** to lessen any confusion that can cause files to not be created or copied. TTR 862 was generated to document the recommended changes to the Software Note 6.

During the software installation, the test team discovered problems with the GUI login; all attempts to login 0MP, 5MP, and FEPs using any CRS user account passwords created in Part 8 of Software Note 6 failed. It was found that all new user account passwords created in Part 8 contained special characters which are not allowed in the CRS; these passwords caused the GUI login attempt to fail. On the other hand, the CRS did not display any error indication when passwords were inadvertently entered with special characters. The CRS System Administration Manual, Appendix A, Lost Root User Password Recovery Procedures was used to reset the root password so the installer could login to the system and reset the other CRS user account passwords.

On June 22, 2004, OPS23 requested to replace a shared library on the VIP system to fix the problem documented in TTR 837 (VIP automatic password policies do not work); this request was denied and asked to wait till next build cycle. During the first CRS Build 10.0/VIP Build 3.1 ST weekly Test Review Group meeting on June 23, 2004, OPS24 again confirmed the test system and components to be certified by Program Managers and responsible Development branches. Once OPS24 starts the ST, OPS24 takes over the test system and system configurations will not be changed unless modifications are approved by the TRG members.

<u>The following TTRs were generated during CRS Build 9.90/VIP Build 3.0.5 ST</u>:

TTR 837 I5/P3 VIP automatic password policies do not work
TTR 838 I2/P2 FEP 2 Crashed and umount command displayed on FEP terminal
TTR 839 I3/P3 Slow external voice message broadcast
TTR 840 I2/P2 External Voice Messages were allowed to be edited
TTR 841 I4/P4 External voice message does not display proper message name on the Broadcast Cycle
TTR 842 I1/P2 DB_VV termination after 5MP Switch and SSO message deletions
TTR 843 I5/P2 VIP status icon blinks the pending yellow icon incorrectly during external voice message input
TTR 844 I1/P3 External voice message processing not interrupted by another higher category external voice message
TTR 845 I3/P3 Interruption problems during emergency override and external voice message input
TTR 846 I4/P2 Xprmon printer utility problems
TTR 847 I5/P3 UnixWare warning message that MEMFS virtual files system is filling up
TTR 848 I4/P2 CRS automatic password policies do not work
TTR 849 I4/P4 ACP2 failed diagnostics verification

TTR 850 I1/P2 Add Transmitter function does not work via XCRS_SITE program
TTR 851 I4/P3 EO with Autoschedule does not get into the Program Interrupt Category for 13 transmitters
TTR 852 I4/P2 The Save As function does not work for Listening Areas and Listening Zones
TTR 853 I4/P2 Zero byte input file did NOT cause Alert Monitor to display an error event
TTR 854 I4/P5 Print Jobs cannot be removed from print queue
TTR 855 I2/P2 VIP forced to shutdown during MP switch
TTR 856 I4/P2 Message Record/Playback dialog help problems
TTR 857 I4/P3 FEP1 streamcp problems
TTR 858 I4/P2 LANtronics box displaying irregular signals

During the weekly TRG meeting on June 30, 2004, OPS24 agreed to complete all the test procedures with the Maximum configuration by July 13, 2004 and requested if OPS23 could deliver a new build by this day. By doing this, OPS23 would have enough time to submit a new build which included all Impacts 1 and 2 fixes, and allow time for OPS24 to retest with all configurations (Maximum, Large, and Typical).

7.2 CRS Build 9.91 and VIP Build 3.0.6

On July 12, 2004, the CRS Build 9.91/VIP Build 3.0.6 software load was delivered to OPS24. The Updated CRS Build 9.91/VIP Build 3.0.6 software load included fixes for the following TTRs:

TTR 837 I5/P3 VIP automatic password policies do not work (VIP 3.0.6)
TTR 839 I3/P3 Slow external voice message broadcast
TTR 843 I5/P2 VIP status icon blinks the pending yellow icon incorrectly during the external voice input
TTR 844 I1/P3 External voice message processing not interrupted by another higher category external voice message
TTR 848 I4/P2 CRS automatic password policies do not work
TTR 852 I4/P2 The Save As function does not work for Listening Areas and Listening Zones
TTR 855 I2/P2 VIP forced to shutdown during MP switch
TTR 856 I4/P2 Message Record/Playback dialog help problems

OPS24 installed CRS Build 9.91/VIP Build 3.0.6 software on the test system by following the updated EHB-7 Software Note 6 which was distributed by OPS23 on July 8, 2004, and continued the ST with the Large configuration ST checklist.

During this software load testing, OPS24 expressed concerns with the system certification. Not all the test system components were certified prior to the test. OPS24 had experienced problems with the Remote Off-Air Monitoring System (ROAMS) Monitoring Unit (MU) simulator and the ROAMS MU on the 18th floor. The group identified a few items must be certified prior to any system tests. They are ROAMS Simulator, ROAMS MU (this ROAMS monitoring unit belongs to the WSH NWR branch), Audio Control Panels (ACPs), SAME tone amplitude setting, CRS NWRSAME decoders (4407, DCR-450), NWRSAME encoder, and hard disk clean up.

The following TTRs were generated during CRS Build 9.91/VIP Build 3.0.6 ST:

TTR 859 I2/P5 3fep metadata write error caused root fs to be disabled
TTR 860 I4/P2 CRS Password checking for "user name or any variant" failed
TTR 861 I5/P2 Proper procedures needed for CRS 0MP hard drive replacement
TTR 862 I4/P2 CRS Software Note 6 corrections and recommendations
TTR 863 I3/P4 EO with Autoschedule does not get into the Program Interrupt Category for 13 transmitters – Slowness
TTR 864 I3/P2 Externally generated voice messages are being truncated
TTR 865 I5/P3 Default directory on the Weather Msg correction did not contain a message with an error
TTR 866 I3/P3 Send Voice" button was disabled for a SSO externally generated voice message
TTR 867 I5/P3 Received a password expire notification message during a MP switch
TTR 868 I1/P1 System hangs when /tmp directory is out of disk space.

On the morning of July 15, 2004, several problems were experienced by OPS24:

a. Some of externally generated voice messages came in without headers or contents
b. Lost of the transmitter #10 during a MP switch to 5MP as Master
c. While switching back to 0MP as Master, the system hung when trying to use GUI login window.

The ST was suspended and the system was turned over to OPS23 for analysis. OPS23 investigated problems and found out the /tmp directory was full. OPS23 saved log information and tried to reboot and clean the system for OPS24 to resume the ST. However, the font size was too big; OPS23 could not fix the problem and a CRS clean disk image was performed on the test system. TTR 868 (System hangs when /tmp directory is out of disk space) was written to document the problem and OPS24 requested it to be fixed as soon as possible. OPS23 confirmed a new build with fixes for TTR 868 would be delivered on July 20, 2004.

7.3 CRS Build 9.92

On July 20, 2004, OPS24 installed the CRS Build 9.92, performed key creation procedures on the test system, and resumed the ST with Large configuration. The CRS Build 9.92 included fixes for the following TTRs:

TTR 864 I3/P2 Externally generated voice messages are being truncated
TTR 868 I1/P1 System hangs when /tmp directory is out of disk space
TTR 869 I5/P3 SOM Changes/Online help did not include write-ups on the “Create ASCII File” Functionality

The following TTRs were generated during CRS Build 9.92:

TTR 869 I5/P3 SOM Changes/Online Help did not include a writeup on the "Create ASCII

File" functionality

TTR 870 I1/P3 Externally generated voice messages that were bound for SSO were sent as regular messages

TTR 871 I5/P3 SOM Changes/Online Help did not include a writeup on the "Create ASCII File" functionality

TTR 872 I2/P2 VIP does not allow user a chance to change password

TTR 873 I4/P3 VIP would not accept the previous and original passwords after more than 8 times

TTR 874 I3/P3 Loud click sound is heard before every externally generated voice messages on CRS Broadcast Cycle

TTR 875 I5/P3 Font size is too big for the Broadcast Cycle Report

TTR 876 I4/P3 CRS performed diagnostic tests on a non-existence transmitter

TTR 877 I1/P2 CRS crashed when an MP switch-over was performed

TTR 878 I1/P3 CRS shutting down during the MP switch-over

TTR 879 I5/P3 Message Type deletion error

TTR 880 I5/P3 SSO VIP Retry leaves shadow file undeleted

OPS24 experienced many problems that related to the externally generated voice messages function; some of the problems are listed as follow:

a. The broadcasting of externally generated voice messages was very slow. The external voice messages took at least 30-40 seconds before being broadcast and displayed on the Broadcast Cycle. The file sizes range from 2.3 Mb to 600K bytes. If these watches and warnings (of external voice message types) are ever sent to CRS, bigger files might take longer to process and affect prompt and speedy broadcast.

b. The external voice messages that were bound for Synthetic Speech Override (SSO) were sent as regular messages.

c. Interruption problems were experienced during emergency override and external voice message input.

d. The external voice message processing was not interrupted by another higher category external voice message.

e. The CRS hangs when /tmp directory is out of disk space, and /tmp directory contained externally generated voice messages with errors.

All external voice message problems were documented in TTRs (839, 841, 844, 845, 864, 866, 868, 870, and 874) (see Attachment E). The ST test team expressed concerns about this function and recommended it to be deactivated due to performance issues and possible degradation of system effectiveness. OPS23 agreed to deactivate the function until a specific requirement is defined.

7.4 CRS Build 9.93

On July 23, 2004, OPS23 delivered the final CRS Build 9.93 software load which included the installation of code to deactivate the Externally Generated Voice Message function via the flag file "/crs/data/CP/XVOICE".

The TRG agreed the Externally Generated Voice Messages function would be deactivated until the following requirements are met:

1) The System Requirement Specification (SRS) for this function is defined
2) There is design/implementation to meet the requirements.

OPS24 continued the ST with Typical configuration checklist (10 scheduled tests) then retested Maximum configuration.

<u>The following TTRs were generated during CRS Build 9.93:</u>

TTR 881	I4/P5	Hardware Error on 3FEP
TTR 882	I4/P3	MP switching with FEP switching problems
TTR 883	I5/P3	The ftp.ksh file still contains 'ftp' remarks in its comment lines
TTR 884	I5/P3	cp_ai-rcv terminated multiple times overnight
TTR 885	I3/P5	FEP1 went down while investigating TTR 884
TTR 886	I4/P3	WRSAME tone generator Save/Restore settings problems
TTR 887	I2/P1	The ssh connection from 5MP to VIP is not operational
TTR 888	I3/P3	Lost ACP1 while performing playback with 4BKUP switched-in for 1FEP
TTR 889	I3/P4	ACP power reset lose 4BKUP configuration
TTR 890	I4/P3	AWIPS time update is executed when "Save" hotkey is clicked and at the requested time.

On August 2, 2004, the ST was temporarily suspended at 10:00 AM due to possible network problems and the test system was turned over to OPS23 for network analysis and fix. OPS23 indicated the "ssh" was not properly working via the network connection between 5MP and the VIP processor; OPS23 also attributed this anomaly to a possible network failure. However, the problem could not be identified and fixed until the next day due to the network administrator unavailability. OPS24 resumed the ST few hours later with 0MP as Master.

On August 5, 2004, the CRS Build 10.0/VIP Build 3.1 ST was concluded with the ST Wrap-Up/OAT Readiness Review. During the review, the OAT director indicated there were no outstanding TTRs that were designated as Impact 1 or 2. The system is stable, and the only minor issue that needs further investigation is a software communication module (cp_ai_rcv) that will, at times, terminate and quickly restart. The messages are still properly converted by VIP and are still subsequently broadcasted.

The CRS/VIP Software Manager commented the communication module issue does not pose a risk to the overall system effectiveness. He also added that possible increased activity load

and/or the introduction of the secure shell feature could have caused this condition. However, the OAT will proceed with the existing build, CRS Build 9.93/VIP Build 3.1, since it has undergone through formal ST and is deemed stable for OAT.

8.0 Conclusions

ST conclusions are supported by the following examination of the original test objectives:

a. Verify the updated Software Note 6; CRS Build 10.0/VIP Build 3.1 Software Installation Procedures was complete and accurate.

   The initial EHB-7 Software Note 6, Software Installation Instructions Procedures delivered to OPS24 during the Test Readiness Review was confusing, especially with Part 9, Installation of SSH Keys; this part was extensively "red-lined" and revised to lessen any confusion that can cause files to not be created or copied. Red-lined comments and recommendations were forwarded to OPS23 to be incorporated into the updated Software Note 6. The updated Software Note 6 was complete, understandable, and easy to follow. No problems were experienced during the subsequent CRS build installations on the test system as the updated copy of Software Note 6 was used.

b. Validate all the scheduled software fixes and enhancements.

   All respective tests with different builds and various configurations (Maximum, Large, and Typical) were conducted on the test system to verify all fixes and enhancements.

   Based on a review of all CRS ST Sequence Checklists and test results, all the scheduled software fixes and enhancements were validated and they performed as specified in the CRS Build 10.0/VIP Build 3.1 Release Notes.

c. Verify no system degradation or problems preventing start of the CRS Build 9.0/VIP Build 3.0 OAT.

   Regression tests with different configurations (Maximum, Large, and Typical) and builds were performed on the test system. The regression tests revealed no system degradation, and no problems preventing start of the OAT were identified.

9.0 Recommendations

Based on the review of the CRS Build 10.0/VIP Build 3.1 test results and conclusions, the TRG is recommending the following items:

a. All critical problems observed during ST have been resolved. There were no outstanding TTRs that were designated as Impact 1 or 2. The TRG recommended the OAT proceed with the final software build, CRS Build 9.93/VIP Build 3.0.6, since it has undergone through formal ST and is deemed stable for the OAT.

b. The VIP remote secure file transfer protocol “sftp” function should be tested at the OAT sites; this optional feature was not fully tested at WSH during the ST due to the network limitation. WAV/MP3 files will be transferred from the VIP processor to the Local Data Acquisition Device (LDAD) server (LS1). The OAT sites will be responsible for transferring WAV/MP3 files from the LS1 to an external processor where the files are to be used.

c. The new NWRSAME DMO test tone function should be tested at the OAT sites in addition to the site’s routine weekly tests.

10.0 Lessons Learned

- Prior to the ST, the test system and its components must be certified by Program Managers and responsible Development branches. Once OPS24 starts the ST, OPS24 takes over the test system and system configurations cannot be changed unless modifications are approved by the TRG. With an approval from the TRG, the ST will be suspended for modifications and resumed when the system is updated and validated ready for the ST by the Development branches.

- At the current time, there is no CRS Configuration Control Board (CCB). However, The CRS CCB must be established prior to the next software build releases. The CRS CCB will determine which future software build will contain the fixes and enhancements, and when it will be distributed.

- A CRS replacement system should be taken into consideration because there have been some problems that were not resolved and cannot be fixed. These problems were documented in TTR 849 (ACP2 failed diagnostic verification), and TTR 851 (EO with autoschedule does not get into the Program Interrupt Category for 13 transmitters); OPS23 confirmed the TRG that OPS23 does not have resources and knowledge to fix these problems and the only way to fix them is replacing the current CRS system with a new system.

Attachment A – System Test Sequence Checklist - MAXIMUM

Test #	Title	Completion Date	Status P/F
000	CRS 10.0/VIP Installation	6/18/04	P
004	CRS Build 10.0 Specific Tests	6/18/04	P
100	UNIX Services	6/20/04	P
101	System Utilities	6/23/04	P
102	System Logging	6/23/04	P
103	CRS Tones	6/25/04	P
104	Offline CRS Utilities	6/25/04	P
105	GUI-Transmitter Configure	6/28/04	P
106	GUI-Disable Silence	6/28/04	P
107	GUI-System Reports	6/28/04	P
108	GUI-Pronunciation Dictionary	6/28/04	P
001	Spanish Messages Setup, Input and Verification	6/28/04	P
002	CRS / VIP Setup	6/29/04	P
500	Voice Improvement Processor	6/29/04	P
501	VIP Configuration & Functions	6/30/04	P
502	VIP Dictionary & Word Pronunciation Evaluation	6/30/04	P
503	VIP Remote File Transfer	N/A	
201	Message Input and Verification	7/01/04	P
202	Interrupt Messages	7/02/04	P
203	MRD	7/01/04	P
204	Lead-In Associations /Modifiers / CTA / Time interval	7/02/04	P

Test #	Title	Completion Date	Status P/F
205	Message Components	7/02/04	P
206	AWIPS	7/02/04	P
301	ROAMS	7/06/04	P
303	Emergency Override	7/06/04	P
304	Synthetic Speech Override	7/06/04	P
601	Database Backup	7/06/04	P
602	Dictionary Backup	7/07/04	P
401	MP Switch	7/07/04	P
402	FEP Switch	7/07/04	P
403	Backup Live	7/07/04	P
800	CRS / VIP System Stability	7/08/04	P

Attachment B – System Test Sequence Checklist - LARGE

Test #	Title	Completion Date	Status P/F
000	CRS 10.0/VIP Installation	7/20/04	P
004	CRS Build 10.0 Specific Tests	7/20/04	P
101	System Utilities	7/21/04	P
102	System Logging	7/21/04	P
104	Offline CRS Utilities	7/21/04	P
001	Spanish Messages Setup, Input and Verification	7/21/04	P
500	Voice Improvement Processor	7/22/04	P
201	Message Input and Verification	7/22/04	P
202	Interrupt Messages	7/22/04	P
204	Lead-In Associations /Modifiers / CTA / Time interval	7/23/04	P
301	ROAMS	7/22/04	P
303	Emergency Override (EO)	7/24/04	P
304	Synthetic Speech Override	7/24/04	P
601	Database Backup	7/24/04	P
401	MP Switch	7/24/04	P
402	FEP Switch	7/24/04	P
800	CRS Stability	7/24/04	P

Attachment C - System Test Sequence Checklist – TYPICAL

Test #	Title	Completion Date	Status P/F
000	CRS 10.0/VIP Installation	N/A	
004	CRS Build 10.0 Specific Tests	7/26/04	P
104	Offline CRS Utilities	7/26/04	P
201	Message Input and Verification	7/27/04	P
301	ROAMS	7/27/04	P
303	Emergency Override	7/27/04	P
304	Synthetic Speech Override	7/27/04	P
601	Database Backup	7/27/04	P
401	MP Switch	7/27/04	P
402	FEP Switch	7/27/04	P
800	CRS Stability	N/A	

Attachment D – System Retest Sequence Checklist – MAXIMUM

Test #	Title	Completion Date	Status P/F
004	CRS Build 10.0 Specific Tests	7/28/04	P
100	UNIX Services	7/28/04	P
103	CRS Tones	7/30/04	P
001	Spanish Messages Setup, Input and Verification	7/28/04	P
002	CRS / VIP Setup	7/30/04	P
500	Voice Improvement Processor	8/02/04	P
501	VIP Configuration & Functions	7/30/04	P
502	VIP Dictionary & Word Pronunciation Evaluation	7/30/04	P
503	VIP Remote File Transfer	8/02/04	P
201	Message Input and Verification	8/02/04	P
202	Interrupt Messages	8/03/04	P
203	MRD	8/03/04	P
205	Message Components	8/03/04	P
206	AWIPS	8/03/04	P
303	Emergency Override	8/04/04	P
304	Synthetic Speech Override	8/04/04	P
602	Dictionary Backup	8/04/04	P
401	MP Switch	8/04/04	P
402	FEP Switch	8/04/04	P
403	Backup Live	8/04/04	P
105	GUI-Transmitter Configure	8/04/04	P
106	GUI-Disable Silence	8/04/04	P

Test #	Title	Completion Date	Status P/F
107	GUI-System Reports	8/04/04	P
108	GUI-Pronunciation Dictionary	8/04/04	P
800	CRS / VIP System Stability	N/A	

Attachment E - CRS BUILD 10.0/VIP BUILD 3.1
TEST TROUBLE REPORTS

TTR	Impact/Priority	Summary	Status
837	I5/P3	VIP automatic password policies do not work	OAT, assigned to OPS24
838	I2/P2	FEP 2 Crashed and umount command displayed on FEP terminal	Closed
839	I3/P3	Slow external voice message broadcast	Deferred
840	I2/P2	External Voice Messages were allowed to be edited	Closed
841	I4/P4	External voice message does not display proper message name on the Broadcast Cycle	Deferred
842	I1/P2	DB_VV termination after 5MP Switch and SSO message deletions	Closed
843	I5/P2	VIP status icon blinks the pending yellow icon incorrectly during external voice message input	Closed (Fixed)
844	I3/P3	External voice message processing not interrupted by another higher category external voice message	Deferred
845	I3/P3	Interruption problems during emergency override and external voice message input	CCB Review, assigned to OPS23
846	I4/P2	Xprmon printer utility problems	OAT, assigned to OPS24
847	I5/P3	UnixWare warning message that MEMFS virtual files system is filling up	CCB Review, assigned to OPS23
848	I4/P2	CRS automatic password policies do not work	OAT, assigned to OPS24
849	I4/P4	ACP2 failed diagnostics verification	Deferred
850	I1/P2	Add Transmitter function does not work via XCRS_SITE program	Closed (Fixed)
851	I4/P3	EO with Autoschedule does not get into the Program Interrupt Category for 13 transmitters	CCB Review, assigned to OPS23
852	I4/P2	The Save As function does not work for Listening Areas and Listening Zones	OAT, assigned to OPS24
853	I4/P2	Zero byte input file did NOT cause Alert	

		Monitor to display an error event	Closed (Fixed)
854	I4/P5	Print Jobs cannot be removed from print queue	OAT, assigned to OPS24
855	I2/P2	VIP forced to shutdown during MP switch	OAT, assigned to OPS24
856	I4/P2	Message Record/Playback dialog help problems	OAT, assigned to OPS24
857	I4/P3	FEP1 streamcp problems	CCB Review, assigned to OPS23
858	I4/P2	LANtronics box displaying irregular signals	Closed
859	I2/P5	3fep metadata write error caused root fs to be disabled	Closed
860	I4/P2	CRS Password checking for "user name or any variant" failed	Closed
861	I5/P2	Proper procedures needed for CRS 0MP hard drive replacement	OAT, assigned to OPS24
862	I4/P2	CRS Software Note 6 corrections and recommendations	OAT, assigned to OPS24
863	I3/P4	EO with Autoschedule does not get into the Program Interrupt Category for 13 transmitters – Slowness	Deferred
864	I3/P2	Externally generated voice messages are being truncated	OAT, assigned to OPS24
865	I5/P3	Default directory on the Weather Msg correction did not contain a message with an error	Assigned to OPS23
866	I3/P3	Send Voice" button was disabled for a SSO externally generated voice message	Deferred
867	I5/P3	Received a password expire notification message during a MP switch	Closed
868	I1/P1	System hangs when /tmp directory is out of disk space	OAT, assigned to OPS24
869	I5/P3	SOM Changes/Online Help did not include a writeup on the "Create ASCII File" functionality	OAT, assigned to OPS24
870	I1/P3	Externally generated voice messages that were bound for SSO were sent as regular messages	Deferred
871	I5/P3	"Sound server fatal error" was displayed on VIP	Closed
872	I2/P2	VIP does not allow user a chance to change	OAT, assigned to

		password	OPS24
873	I4/P3	VIP would not accept the previous and original passwords after more than 8 times	OAT, assigned to OPS24
874	I3/P3	Loud click sound is heard before every externally generated voice messages on CRS Broadcast Cycle	OAT, assigned to OPS24
875	I5/P3	Font size is too big for the Broadcast Cycle Report	OAT, assigned to OPS24
876	I4/P3	CRS performed diagnostic tests on a non-existence transmitter	Submit, assigned to OPS23
877	I1/P2	CRS crashed when an MP switch-over was performed	Closed
878	I4/P3	CRS shutting down during the MP switch-over	Design, assigned to OPS23
879	I5/P3	Message Type deletion error	Submit, assigned to OPS23
880	I5/P3	SSO VIP Retry leaves shadow file undeleted	CCB Review, assigned to OPS23
881	I4/P5	Hardware Error on 3FEP	Closed
882	I4/P3	MP switching with FEP switching problems	Design, assigned to OPS23
883	I5/P3	The ftp.ksh file still contains 'ftp' remarks in its comment lines	CCB Review, assigned to OPS23
884	I5/P3	cp_ai-rcv terminated multiple times overnight	CCB Review, assigned to OPS23
885	I3/P5	FEP1 went down while investigating TTR 884	CCB Review, assigned to OPS23
886	I4/P3	WRSAME tone generator Save/Restore settings problems	CCB Review, assigned to OPS23
887	I2/P1	The ssh connection from 5MP to VIP is not operational	Closed (Fixed)
888	I3/P3	Lost ACP1 while performing playback with 4BKUP switched-in for 1FEP	CCB Review, assigned to OPS23
889	I3/P4	ACP power reset lose 4BKUP configuration	Deferred
890	I4/P3	AWIPS time update is executed when	Analysis,

		"Save" hotkey is clicked and at the Requested time	Assigned to OPS23

Attachment F

CRS Build 10.0/VIP Build 3.1 Release Notes

These notes document the new features and bug fixes incorporated into the CRS Build 10.0 and VIP Build 3.1 software releases. Engineering Change Request (TTR) numbers have been provided to reference a formally documented problem which has been resolved by this build. The following TTRs are listed numerically in two categories: New software enhancements/capabilities and bug fixes.

SOFTWARE ENHANCEMENTS

1. **TTR 832: Support For Externally Generated Voice Messages -THIS FEATURE WILL NOT BE ACTIVATED IN BUILD 10.0. IF CRS BUILD 10.0 RECEIVES AN EXTERNALLY GENERATED VOICE MESSAGE, AN ALERT MONITOR ERROR MESSAGE WILL BE GENERATED AND THE MESSAGE WILL BE DELETED. IF THIS CAPABILITY IS NEEDED IN THE FUTURE TO SUPPORT THE ALL HAZARDS COLLECTION SYTEM, IT WILL BE ACTIVATED AT THAT TIME.**

   Prior to Build 10.0, CRS software only received weather related messages in ASCII text format. It processes the messages based on Message Attributes stored in the weather message header and system data stored in various database tables. These text messages are converted from text to speech either using the DECtalk algorithm or using the VIP. Prior to Build 10.0, CRS did not provide the capability for processing externally generated voice messages.

   Build 10.0 provides the capability to process, schedule, and broadcast externally generated voice messages. The CRS weather message header Message Attributes include a 5-character Message Format code used to identify the format and language of the message. Previously, the only Message Formats that could be properly processed were “T_ENG” and “T_SPA” for English and Spanish text respectively. The Build 10.0 software will process “V_ENG” and “V_SPA” for English and Spanish voice. **The CRS formatter generating the voice message and forwarding it to CRS is responsible for ensuring it is properly constructed so that CRS can successfully process it.** Since these voice files will be passed through the DECtalk for broadcast on the transmitter in the same manner as manually recorded voice files, either of the “voice” Message Formats may be used for both English and Spanish externally generated voice files. However, for consistency, we recommend the use of “V_ENG” only for all externally generated voice files.

The following is the format of the message name for the externally generated voice messages:

EV ID <msg typ ID> <msg ID>

Where <msg typ ID> is the internally-assigned numeric Message Type identifier and <msg ID> is the internally-assigned numeric message identifier of the subject message. Some restrictions are required for the proper handling of the externally generated voice files. Because the weather message header must be extracted in its entirety, the **CTRL-F** and **CTRL-B** sequences are **not** permitted to be imbedded in the voice file. The new voice processing software will pass through DECtalk formatted .wav files, i.e. 10K sample .wav files. The software will also recognize and convert using the SOX utility the more standard 16K sample .wav files. All voice files must be monaural.

2. **TTR 831: Add Special DMO Test NWRSAME Capability** - Prior to Build 10.0, CRS did not have the capability to perform the DMO Test NWRSAME. This special event code provides the NWS field offices a means of conducting exercises to practice issuing authentic warnings and other critical messages without disrupting the EAS network or turning on receiver codes used by industry and the general public. It may also be used as a maintenance aid to align and test the communications link.

   The CRS software has been modified to check for special Event Code “DMO”. If found, CRS will ignore the normal NWRSAME generation of UGC codes based on the LACs in the message header. Instead, CRS will generate a single code of “999000". The event code “DMO” should not normally be programmed into the receiver decoder, and the location code of “999000" does not match any existing or future geographical area codes.

3. **TTR 804: Replacement of FTP Transactions with SFTP** - The CRS consists of 2 MPs, 2 -4 FEPs, and a single VIP. CRS receives specially formatted text messages from AWIPS that are placed in a directory on the Master MP for processing. Text messages that are flagged to be transformed into the Speechify voices (Tom, Donna, and Javier) are sent to the VIP for processing. The VIP will convert the text messages to 16K sample .wav files. Optionally these .wav files may be directed through LDAD to external systems, such as Web Servers, the WR Interactive Voice Response (IVR) system, etc. This option also allows for the files to be converted via the SOX utility to mp3 files and transferred. After the files received from the Master MP are processed, the SOX utility is used to convert them 10K sample .wav files, which is the format required for DECtalk acceptance. The 10K sample .wav files are transferred back to the Master MP, where they are scheduled and copied to the shadow MP and FEPs for subsequent transmission. Control files are also passed back and forth between the Master MP and VIP that allow the transfer of timeout and status information.

Prior to CRS Build 10.0/VIP 3.1, all the message transactions between AWIPS and Master MP, Master MP and VIP, and VIP and external systems were via file transfer protocol (ftp). These ftp transactions require the passing of the crs user password between systems and create security problems that are in violation of the DOC Computer Security Policy. Therefore, these transactions will be replaced with secure file transfer protocol (sftp). The sftp required the passing of authentication keys between the systems rather than a password. Because the transition from ftp to sftp in CRS Build 10.0 requires close coordination of this same change implemented in AWIPS OB4, ftp will remain as an option for transactions between AWIPS and the Master MP. This will allow sites to install either AWIPS OB4 or CRS Build 10.0 first.

LATEST AWIPS UPDATE: PLEASE NOTE THAT BECAUSE OF AWIPS LOADING PROBLEMS, AWIPS OB4 WILL NOT BE IMPLEMENTING SFTP. TRANSACTIONS FROM AWIPS TO CRS WILL CONTINUE TO USE FTP.

However transactions between Master MP and VIP and those between VIP and external systems will only be with sftp. For those functions, the ftp function will be removed in CRS Build 10.0/VIP Build 3.1.

The MPs and VIP support open ssh connections between themselves and AWIPS. This allows for the use of sftp, secure shell (ssh), and secure telnet. Authentication keys are needed to authorize these transfers or remote sessions. Public and private key files have been established on all these processors as part of the installation process. The VIP disk recovery procedure continues to be the utilization of CD imaging system to restore the disk. The recovery procedures will include new steps for the authorization keys. Generally, if the CRS application is re-installed, the authorization keys remain intact, and no steps to re-establish the keys are necessary. However, if the CRS application software is being re-installed as the result of an MP hard drive replacement, the keys will need to be re-established. Appendix C, CRS Build Installation Procedure, has been modified to reflect this fact.

Paths: After the initial CRS Build 10.0 software is installed, six or seven connections are defined that support sftp transfers and ssh remote sessions. The six required paths are AWIPS to 0MP, AWIPS to 5MP, 0MP to VIP, 5MP to VIP, VIP to 0MP, and VIP to 5MP. The optional path is VIP to External System.

Key Configuration Files: The sftp transfers and ssh sessions require that openssh has configuration data. Public key data must be in the files for all the authorized systems that will transfer data to the system under configuration. All the public key data used by the setup scripts will be in three types of files:

1. **Individual Public Data Key Files**: These are mathematical data

and the public half of a pair of keys. Each key is associated with the private key at the originating end of the paths described above. These keys are in filenames with
extensions of “pub”.

2. Authorized Key Files: These are an aggregate of the public key data. These are the individual identity key pairs created for a unique user to identify without a password.

3. **Known Hosts Key Files:** These are an aggregate of the public key data. These are the keys used for computer to computer communication during the encryption process.

A system wide file called **Known Hosts File** also exists as part of the system ssh configuration directory. These are the configuration files used directly by openssh and contain several keys.

Key Generation Scripts: Key generation is done with the contents of the public and private mathematical keystring files for openssh encryption. The key generation for 0MP and 5MP is done when they are first rebooted immediately following the installation of Build 10.0. After its initial use, the key generation script is stored on the 0MP in /etc/config/osdone/sshinstaller.sh. The VIP key generation is done in a similar manner. The scripts will not replace key files already generated, but will generate new and distinct files if a key file is absent. If new keys are generated, the key configuration script must be rerun on the MPs and VIP.

Key Configuration Script: This is also called the fixkey script. This script will display a fingerprint of the public key files for verification and concatenate them together into their respective authorized key files. It will then prompt for known hosts fingerprints approval and add the approved host public key information into the known hosts key files.

Fingerprint: This is a short string of hexadecimal digits in ASCII text string format.
This check sum of a public key file that can confirm the correct key data is used comparing it to a stored, printed copy of the fingerprint sequence.

4. **TTR 805: CRS And VIP Automatic Password Checking** - Prior to CRS Build 10/VIP Build 3.1, very little automatic password checking was performed.

The following six rules for password checking have been added to the MP, FEP, and VIP systems for all users except root, switchmp, and sysadm:

a. Password must have at least 8 non-blank characters.

b. Password must contain at least two alphabetic characters.
c. Password must contain at least one number.
d. Password must have at least 3 different characters from the old password.
e. Password must differ from the user name, any circular shift of the user name, reverse order of the user name, or any reverse circular shift of the user name. (Please note that all CRS user accounts contain fewer than 8 characters. Therefore, having the user name as the password will fail on the restriction described above in (a.).
f. Password must be changed at least every 90 days.

Additionally, the following four rules for password checking have been added to the VIP system:

a. Password must contain at least one upper case alphabetic character.
b. Six of the characters may occur only once in the password.
c. In addition to the current password, the password cannot be changed to the 10 previous passwords. Therefore, the current password will not be able to be re-used for the next 11 password changes.
d. Password cannot contain vendor/manufacturer default passwords, words found in any dictionary (forward or backward), addresses, birthdays, or common character sequence.

Because of password aging, when the operator logs into the CRS GUI or the KDE desktop, a pop-up dialog will display in the upper left-hand corner of the display advising him in how many days the respective password will expire. The operator must click **okay** to continue the login.

IMPORTANT NOTE: PASSWORDS FOR ALL USERS SHOULD BE CHANGED AT THE SAME TIME. THE WARNING AND EXPIRATION MESSAGES WILL ONLY BE SEEN FOR THOSE USERS THAT YOU LOG INTO. FOR EXAMPLE, MOST SITES DO NOT LOG IN AS CRS USER. THEREFORE, IF THE CRS USER PASSWORD IS GETTING CLOSE TO EXPIRATION OR HAS IN FACT EXPIRED, THE OPERATOR MAY NOT SEE THE WARNING OR EXPIRATION MESSAGE. THEREFORE, SITES SHOULD MAKE SURE THAT WHEN THEY SEE THE PASSWORD WARNING OR EXPIRATION MESSAGE FOR ONE USER, THEY CHANGE PASSWORDS FOR ALL USERS FOLLOWING THE PROCEDURES IN APPENDIX A OF THE DRAFT SYSTEM ADMINISTRATION MANUAL.

5. TTR 807: VIP Disk Imaging System Changed To Mondo Image System - Prior to VIP Build 3.1, the VIP operating system and application software distribution, backup, and recovery were performed using a DOS based package called Drive Image from PowerQuest. This disk imaging system was difficult to generate the disk image and very time consuming because it did not directly

support the Linux ext3 file systems.

The new Mondo Image System is an open source Linux based package that has been used previously in other NWS supported Linux systems. It boots to Linux off a CD (Drive Image required a bootable diskette, and was itself run from diskette) and can completely restore the VIP operating system and application to a hard drive. It is Linux based and can more easily handle the ext3 file systems.

6. **TTR 808: CRS Application Changes In MPs To Accommodate SFTP Transactions With VIP** - Prior to CRS Build 10.0, CRS used the ftp.ksh script to used the clear text crs user password for ftp transfer to and from VIP. It also used the chg_emb_pw.ksh script during CRS application install and when passwords were changed to prompt the user to enter the crs user password. The chg_emb_pw script placed this password in the ftp.ksh script and distributed the updated ftp.ksh script to the other processors.

   All references to ftp are changed to sftp. Commands will be accessed from a dynamically created text file using functionality built into the sftp so that the previous ftp mechanism is retained. The clear text crs user password has been removed from the ftp.ksh script. This change also requires the removal of the chg_emb_pw.ksh script.

7. **TTR 809: SFTP Flag Installation On AWIPS** - Prior to CRS Build 10.0, all the message transactions between AWIPS and the Master MP were via ftp.

   Because the transition from ftp to sftp in CRS Build 10.0 requires close coordination of this same change implemented in AWIPS OB4, ftp will remain as an option for transactions between AWIPS and the Master MP. This will allow sites to install either AWIPS OB4 or CRS Build 10.0 first. When sites install CRS Build 10.0, the installation instructions will direct the installer to place a marker file in the a shared directory in the AWIPS system. The AWIPS OB4 software will look for that file to direct it to use sftp for file transfer to CRS. Otherwise, it will continue to use ftp.

   LATEST AWIPS UPDATE: PLEASE NOTE THAT BECAUSE OF AWIPS LOADING PROBLEMS, AWIPS OB4 WILL NOT BE IMPLEMENTING SFTP. TRANSACTIONS FROM AW IPS TO CRS WILL CONTINUE TO USE FTP. THEREFORE, THE MARKER FILE WILL NOT BE INSTALLED ON AWIPS.

8. **TTR 811: VIP SFTP Changes** - Prior to VIP Build 3.1, VIP used ftp for all

message transactions to and from the CRS Master MP and to external systems (remote ftp).

Libraries have been added to VIP to support the sftp and ssh protocols. All transactions to and from the CRS Master MP and to external systems (remote ftp) will now use the sftp protocol. For Master MP/VIP transactions this includes receipt of VIP text messages, transmittal of wave files, and receipt/transmittal of status information.

9. **TTR 813: CRS SFTP Wrapper** - Prior to CRS Build 10.0, CRS used ftp for both sending/receiving files to/from other systems. The ftp wrapper used within CRS contains logic that at the end of the ftp session, signals the CP_AI_RCV binary to look in the appropriate Master MP directory for a new raw text message.

   A similar sftp wrapper has been written to check in the appropriate directory at the end of the sftp session.

10. **TTR 815: Expansion Of Civilian Generated Event Codes Table** - CRS Build 8.5 included the capability to generate a SAME originator code for civilian (non-NWS) generated event codes. NWS generated event codes have an originator code of WXR. The civilian generated event codes have an originator code of CIV. Build 8.5 defined a new file on the MPs: /crs/data/SS/SAME_event_codes.dat with the four civilian generated event codes: CEM, EVI, ADR, and CAE.

    The Build 9.0.1 patch distributed in January 2004, added the following 16 additional event codes to the event code table: AVA, AVW, CDW, EQW, FRW, HMW, LEW, LAE, TOE, NUW, RHW, SPW, VOW, NIC, NPT, and NMN.

    Since Build 9.0.1 was implemented as a patch, this writeup is being included in the Build 10.0 Release Notes to ensure that the updated /crs/data/SS/SAME_event_codes.dat file is being included in the ClearCase software build procedure.

BUG FIXES

1. **TTR 833: Date Time/AWIPS Time Updates Stop/Start Message Processing Software** - Date/Time updates and AWIPS time request updates generated by the CRS operator from the CRS Maintenance menu will always stop the CP_VC process, which is responsible for all VIP message processing, which will cause the VIP icon in the status window to go down briefly. This is necessary since CRS system time updates will affect the processing of incoming message effective/expiration time processing. However, the automatic stopping and subsequent starting of the VIP message processing process may prove to be confusing to the operator.

The Date/Time Update window has been modified to add the following Information Dialog when the operator initiates a time change request:

Update time will restart VIP interface stop/start cp_vc

The operator will be given the opportunity to continue with the command or cancel it.

2. **TTR 834: Multiple Future Effective Time Watch/Warning Interrupts Not Scheduled** - Prior to CRS Build 10.0, multiple watch/warning interrupts with effective times in the future were not scheduled. For example, suppose the current time was 2200 and a severe thunderstorm warning (WBCSVRWBC) was received with an effective time of 2210. Then another severe thunderstorm warning (WBCSVRWBC) was received before 2210 with an effective time of 2220. Normally, the second message should replace the first message. However, in this operationally esoteric case, neither the first nor second message would ever play.

   The CRS software has been modified to handle this operational situation in a more reasonable manner. In the example described above, the first message would not play when its effective time was reached. Instead, because its effective time was in the future when it was received, it will be permanently replaced by the second message, thereby ensuring that it will never play. The second message will play when its effective time is reached.

3. **TTR 835: MMI Display's Font Is Too Small** - Prior to CRS Build 10.0, the font used for the Message Monitor (MMI display) was Helvetica 7. Middle Aged eyes found this very difficult to read.

   The font has been changed to Helvetica 10.

4. **TTR 836: CRS/ROAMS Interface Software Does Not Recognize Local 10-Digit Dialing Bit** - Prior to CRS Build 10.0, the CRS/ROAMS interface software in CRS did not recognize the bit used to define local 10-digit dialing. Therefore, the display resulting from a Query to a ROAMS set for 10-digit dialing would include a garbled area code in the telephone number. For example, a site using 10-digit dialing with an area code of 785 would display an area code of 7185 after the Query.

   The CRS software has been modified to check if the area code is overflowed as a result of the 10-digit dialing. If it is overflowed, it will offset the area code to adjust the display properly.

5. **TTR 786: VIP Processing/Manual Recording Collision** - Prior to CRS Build 10.0, it was possible to encounter problems while simultaneously manually recording a Weather Message (either Weather Message record or Emergency Override) and processing a VIP message. This could result in the

stopping/starting of CRS. If database problems existed,

CRS may not start successfully, which would require operator intervention to clean up the database. As a result, we recommended that sites separate the manual record function from the VIP processing function, i.e. make sure that all manual recordings are made on ACP2 (Shadow Console).

To distribute both digitized voice (manual voice recordings) and VIP wave files in a manner that alleviates the collision problems, the stream copy client/server logic was rewritten to support two stream copy processes. One supports digitized voice messages, the other supports VIP wave files. The new logic facilitates the stopping of all processing of any VIP message that is being stream copied while a digitized voice message is being distributed.

6. **TTR 806: VIP OS Security Patches** - When the Harris Scan software was performed on the VIP Red Hat Linux Version 7.3, it detected four security deficiencies for which patches exist but had not been installed. These four security patches and all production patch packages available from Red Hat, Red Hat Legacy, and the NOAA NCIRT patch server through May 3, 2004 have been applied to VIP Build 3.1.

7. **TTR 810: Messages With Duplicate LACs Are Not Scheduled** - Prior to CRS Build 10.0, messages containing duplicate Listening Area Codes (LACs) in the Message Attribute Header would result in its failure to be scheduled. Additionally, it would result in the generation of a log entry from CP_VC concerning DB_MH notification failing, the this error message did not go to the Alert Monitor. Therefore, the operator would be left with a situation where a message was not being scheduled, but no operator notification that would indicate what the problem might be.

   The CRS Build 10.0 software includes a new function that performs a duplicate check that is used within the LAC parser. This check will allow the parser to "skip over" duplicate LACs and process the message normally.

   In the course of testing this change, we discovered that the changed exacerbated an existing, but never before detected problem. If a message incorrectly separates multiple LACs, i.e. using a "," instead of "-", the new function will cause the software to enter into an infinite loop. This problem has been fixed so the software will properly detect the illegal delimiter.

8. **TTR 812: Remote FTP Script Changes** - Prior to VIP Build 3.1, sometimes the VIPserver would not finish the conversion before the ftp put function called in the remote ftp of MP3 files. Also, the pre-defined length of the remote ftp string (remote username:hostname:password) was not always long enough to support what had to be entered.

9. **TTR 816: Remove Spurious Messages From The MMI** - Prior to CRS Build 10.0, a number of error messages routinely displayed in the MMI, which caused questions and confusion. These errors include the following:

    a. **System not licensed or unregistered software.**
    b. **Multi-line sendmail errors (unqualified hostname 0mp unknown) with retries.**

    The remote ftp script has been modified to insert a 10-second delay in the script for the remote ftp of MP3 files. The 23 character string limitation has been increased to 32.

    CRS Build 10.0 removes both a, and b.

10. **TTR 819: Multiple Sets Of VIPserver Processes May Run** - It is possible for the VIP GUI to stop running, even though the VIPserver processes continue to run. In this case, even though the operator cannot access the VIP control windows, the VIP icon in the CRS Status window is up and VIP messages continue to be processed. The problem is that the natural reaction to this situation is for the operator to restart the GUI. After the GUI is up and operating, the main GUI menu will indicate that VIP is down, **even though it is not.** Therefore, the natural reaction of the operator is to restart the VIP application.

    Now the VIP menu will indicate that VIP is up, and the operator will assume all is O.K. Prior to VIP 3.1, when the operator restarted the VIP application under these circumstances, he was actually starting a second set of VIPserver processes. **When more than one set of VIPserver processes are running, the results of the VIP conversion may be disastrous.** Both sets of VIPserver processes are processing the same message and the results are unpredictable. The converted wave file may have long gaps of silence or may play much too fast.

    Modifications in VIP Build 3.1 have been made that kill all the old VIPserver processes when the VIP application is restarted. This prevents the multiple VIPserver scenario described above.

11. **TTR 821: SOM Changes** - The Operational Build 9.0 version of the CRS Site Operator's Manual (SOM) is missing the Create ASCII file button on all figures depicting the the XCRS_Site Configuration Developer screen (Figures 141, 142, 143, and 144). It also is missing the text that describes the function. Also, Section 3.6.2.5.13 of the SOM, Off-Line Tone Generator, does not have language specifically instructing the user to close the Transmitter Configure window following the disabling of the transmitter and prior to entering the Off-Line Tone Generator window.

The Operational Build 10.0 version of the SOM has been changed to include modified Figures 141 - 144 to depict the additional button, the language describing the button's function, and the language to exit the Transmitter Configure window in the appropriate part of Section 3.6.2.5.13. These changes have also been included in the on-line Hyper Text Help pages.

12. **TTR 823: Some Site Identifiers Are Incorrect In The VIP** - Prior to VIP Build 3.1, the VIP file WFOsites.env had several incorrect entries. This file contains the list of approved sites during delivery of new VIP software. Only site identifiers in this list may be entered during VIP software setup via the Setup Wizard. Once the site identifier is selected, it is written to the version file on the VIP. This file is used during the configuration of the remote ftp. Therefore, an incorrect sited identifier in the WFOsites.env file will contaminate the remote ftp configuration.

    The following lists each site, the old identifier, and the new identifier in VIP Build 3.1:

Site	*Old ID*	*New ID*
Jacksonville, FL	**KJAN**	**KJAX**
Key West, FL	**KEYN**	**KEYW**
NMTW (Alpha)	**NMTW**	**NMTW**
NWSHQ2 (Beta)	**NNHDA**	**NHDA**

    Also, neither the CRS nor VIP Site Identifier file contained the identifiers for the 3 NRC systems. Therefore, CRS Build 10.0 and VIP Build 3.1 will modify the respective files to include the 3 NRC identifiers as follows:

Site	*Old ID*	*New ID*
NRC System 1		**NRC1**
NRC System 2		**NRC2**
NRC System 3		**NRC3**

13. **TTR 803: Off-Line Tone Generator Failure To Write Configuration To Disk** - Prior to Build 10.0, the CRS Off-Line Tone Generator software did not write changes to tone amplitude to the transmitter configuration file stored on the MP hard drive. The changes were correctly made in memory, resulting in the tones being generated with newly modified amplitude. However, at some later point in time when the CRS application was terminated and then restarted, the tone amplitude written into memory from the configuration file was the old values. Therefore, from that point on the tones would be generated with the old and incorrect values. This required a work around in the transmitter alignment procedures to have the user enter the Transmitter Configure window to save the values (including the tone amplitudes), since changes in this window **were**

correctly written to the transmitter configuration file.
CRS Build 10.0 has been corrected to write the tone amplitude changes to the transmitter configuration file.

14. **TTR 852: The Save As Function Does Not Work For Listening Areas and Listening Zones** - The CRS GUI includes a *File* menu that allows users to access 5 submenu options. The *Save As* option allows the operator to save the current record under a new name, thereby maintaining the integrity of the originally retrieved record. This option may prove useful in creating new records. For instance, this option could be used in the creation of multiple new Message Types that are very similar. Once all the parameters for the first Message Type are entered and saved, it can be used as a template for the others with the *Save As* option. From most of the GUI windows, the *Save As* option will cause a pop-up window to display with a prompt for a new name that is of variable length. However, prior to Build 10.0, for Listening Areas and Zones, the *Save As* option prompts for a name that is erroneously restricted to 5 characters, rather than 6. This erroneous restriction, therefore, makes it impossible to use the *Save As* function for Listening Areas and Zones.

    The problem is corrected in Build 10.0 by eliminating an incorrect decrement of the maximum length field.

15. **TTR 856: Message Record/Playback Dialog Help Problems** - Clicking on the Help button while in any CRS window forces the Netscape Communicator to display the SOM documentation for that window. Prior to Build 10.0, however, the display for the Weather Message Record/Playback dialog window resulted in the display of an error window which detailed a lock file error in Netscape. Moreover, another Netscape was displayed that listed all the Help files. Upon clicking on the error window OK button, the Record/Playback dialog help window was displayed. Additionally, clicking on the Help button in the Weather Message Text Message Playback dialog window resulted in the display of the Weather Message Correction documentation.

    These problems have been fixed in Build 10.0 so the proper documentation is initially displayed.

16. **TTR 854: Print Jobs Cannot Be Removed From Print Queue** - The CRS Print Monitor can be invoked from the CRS Utilities menu. Upon doing so, the Print Monitor window will be presented. The currently configured printer and status will be displayed as part of the window title. From this window, the operator may access, select, and submit a job to the printer. Several print management functions also are available to the operator including the ability to remove a job from the print queue via the Remove Job button. However, prior to CRS Build 10.0, pressing this button did not properly remove the print job from the queue.

This problem has been fixed in Build 10.0 so print jobs can be removed from the queue.